Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services

STATEMENT OF BASIS

Willow Glen Electric Generating Plant
Entergy Gulf States Utilities, Inc.
St. Gabriel, Iberville Parish, Louisiana
Agency Interest Number: 2625
Activity Number: PER19960002
Draft Permit 1280-00010-V0

I. APPLICANT:

Company:
Entergy Gulf States Utilities, Inc.
2605 Hwy 75, St. Gabriel, LA 70776

Facility:
Willow Glen Electric Generating Plant
2605 Hwy 75, St. Gabriel, Iberville Parish, LA 70776
Approximate UTM coordinates are 681.10 kilometers East and 3350.50 kilometers North, Zone 15

II. FACILITY AND CURRENT PERMIT STATUS:

Entergy Gulf States Utilities, Inc. wishes to permit an existing Electric Services facility. The Willow Glen Electric Generating Plant is an existing facility located approximately 1.3 miles NNW of St. Gabriel in Iberville Parish on Hwy 75 near the town of Willow Glen. The Willow Glen Electric Generating Plant currently operates under Permit No. 229(M-2), issued November 13, 1984. An Acid Rain Permit, No. 1280-00010-IV1 was issued for this facility on September 28, 2005. Entergy estimates that Willow Glen generates approximately 2045 MW of power for residential use in the surrounding area.

The facility submitted a timely application for an initial Part 70 permit and operates pursuant to the "application shield" provided in the program.

The Willow Glen Electric Generating Plant has one state permit that will remain effective until replaced by a Part 70 permit. The facility also operates under an Acid Rain permit. These permits included the following sources:

Willow Glen Electric Generating Plant
Entergy Gulf States Utilities, Inc.
New Orleans, Orleans Parish, Louisiana
Agency Interest Number: 703
Activity Number: PER19960002
Draft Permit 2160-00015-V0

Permit #	Units or Sources	Date Issued
LA 229(M-2)	1A – No. 1 Boiler 1B - No. 1 Boiler 2A - No. 2 Boiler 2B - No. 2 Boiler 3 - No. 3 Boiler 4 - No. 4 Boiler 5 - No. 5 Boiler 501 - Fuel Oil Storage Tank 502 - Fuel Oil Storage Tank 503 - Fuel - Oil Storage Tank 504 - Fuel Oil Storage Tank 505 - Fuel Oil Storage Tank 506 - Fuel Oil Storage Tank 507 - Fuel Oil Storage Tank 508 - Fuel Oil Storage Tank 509 - Fuel Oil Storage Tank 510 - Fuel Oil Storage Tank 511 - Fuel Oil Storage Tank 301 – Gasoline Filling Tank 1-A – Lime Storage Silo 1-B – Lime Storage Silo 2-A – Lime Feed Silo 2-B – Lime Feed Silo	November 13, 1984
1280-00010-IV1 Boiler No. 1 Boiler No. 2 Boiler No. 3 Boiler No. 4 Boiler No. 5	Boiler No. 1 Boiler No. 2 Boiler No. 3 Boiler No. 4 Boiler No. 5	September 28, 2005

The Part 70 permit for the Willow Glen Electric Generating Plant has been drafted to encompass proposed emission levels. This application includes the following sources:

Permit #	Units or Sources	
1280-00010-VO		
	EQT 1	C1A – Unit 1 Boiler Stack A
	EQT 2	C1B – Unit 1 Boiler Stack B
	EQT 3	C2A – Unit 2 Boiler Stack A
	EQT 4	C2B – Unit 2 Boiler Stack B
	EQT 5	C3 – Unit 4 Boiler Stack
	EQT 6	C4 – Unit 5 Boiler Stack
	EQT 7	C5 – Unit 5 Boiler Stack
	EQT 8	C6 – Aux. Unit 3 Boiler Stack
	EQT 9	T1 – Fuel Oil Storage Tank #501
	EQT 10	T2 – Fuel Oil Storage Tank #502
	EQT 11	T3 – Fuel Oil Storage Tank #503

Permit #	Units or Sources	
1280-00010-VO		
	EQT 12	T4 – Fuel Oil Storage Tank #504
	EQT 14	T5 – Fuel Oil Storage Tank #505
	EQT 15	T6 – Fuel Oil Storage Tank #506
	EQT 16	T7 – Fuel Oil Storage Tank #507
	EQT 17	T8 – Fuel Oil Storage Tank #508
	EQT 18	T11 – Fuel Oil Storage Tank #511
	EQT 20	T115 – Gasoline Storage Tank
	EQT 21	M1 – Lime Storage Silo
	EQT 22	M2 – Lime Storage Silo
	EQT 23	M3 – Lime Storage Silo
	EQT 24	M4 – Lime Storage Silo
	EQT 25	M5 – Fly Ash Silo
	ARE 01	Unpaved Roads Fugitive Emissions

III. PROPOSED PERMIT / PROJECT INFORMATION:

Proposed Permit

A permit application and Emission Inventory Questionnaire were submitted by Entergy Gulf States Utilities, Inc. on October 3, 1996 requesting a Part 70 operating permit. Additional information dated November 2, 2005, January 13, 2006, and March 27-29, 2006 was also received.

Project description

The Willow Glen Electric Generating Plant generates approximately 2045 MW of power for the surrounding area and the city of St. Gabriel. The Willow Glen facility generates electricity from the combustion of natural gas, No. 2 fuel oil, No.4 fuel oil and No. 6 fuel oil is burned as a source of energy to generate steam in five main boilers. The steam is used to drive steam turbines which are connected to the electric generators that provide the electric power.

Unit 1 boiler burns natural gas as its primary fuel, No. 2 fuel oil as its secondary fuel and burns No. 4 fuel oil as a tertiary fuel with a maximum heat input of 1522 (gas) and 1672 (oil) MMBtu/hr. Unit 1 exhausts from two separate stacks, C1A and C1B.

Unit 2 boiler burns natural gas as its primary fuel, No. 2 fuel oil as its secondary fuel and burns No. 4 fuel oil as a tertiary fuel with a maximum heat input of 2188 (gas) and 2158 (oil) MMBtu/hr. Unit 2 exhausts from two separate stacks, C2A and C2B.

Unit 3 boiler burns natural gas as its primary fuel, No. 2 fuel oil as its secondary fuel and burns No. 4 fuel oil as a tertiary fuel with a maximum heat input of 5900

(gas) and 5400 (oil) MMBtu/hr. Unit 3 exhausts from one stack, C3.Unit 4 boiler burns natural gas as its primary fuel, and No. 6 fuel oil as its secondary fuel with a maximum heat input of 5400 (gas) and 5400 (oil) MMBtu/hr. Unit 4 exhausts from one stack, C4.

Unit 5 boiler burns natural gas as its primary fuel, and No. 6 fuel oil as its secondary fuel and with a maximum heat input of 5544 (gas) and 5400 (oil) MMBtu/hr. Unit 4 exhausts from one stack, C5.

There is a Unit 3 auxiliary boiler that burns natural gas as its primary fuel, No. 2 fuel oil as its secondary fuel and burns No. 4 fuel oil as a tertiary fuel with a maximum heat input of 206 (gas) and 206 (oil) MMBtu/hr. Unit 3 auxiliary boiler is used to start the Unit 3 boiler and exhausts out of stack C6.

The Willow Glen plant utilizes eleven tanks to store the fuel oil needed for power generation. Tanks T-1, T-2, T-3 are capable of storing No. 2 and No. 4 fuel oil. Tanks T-4, T-5, T-6, T-7, T-8, T-9, T-10, and T-11 store only No. 6 fuel oil. Tank No. T-115 stores gasoline.

In addition to combustion boilers and fuel oil tanks, the Willow Glen Plant utilizes four Lime Storage silos, M1-M4, and a Fly Ash Silo, M5. All of these sources emit insignificant amounts of particulate matter.

On-site are two 35,000-Gallon Hydrocarbon Storage Tanks for housing Natural Gas Distillate. Neither of the tanks is presently in service.

Carbon Monoxide and Sulfur Dioxide emissions are not increasing due to mode of operation or increased boiler throughput. Increases in CO emissions are due to increased AP-42 factors for boilers 3-5 and Aux boiler 3. There are no physical changes or changes in method of operation of the boilers.

Permitted Air Emissions

Estimated permitted emissions in tons per year are as follows:

Pollutant	Before	After	Change
PM_{10}	13843.00	7368.24	- 6474.76
SO_2	64199.00	66641.76	+ 2442.76
NO_X	26037.00	23758.00	- 2279.00
CO	3123.00	5856.38	+ 2733.38
VOC	689.00	600.45	-88.55

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Pollutant	Emissions TPY
1,1,1-Trichloroethane*	0.16
2,2,4-Trimethlypentane	< 0.01
Arsenic*	0.57
Antimony*	1.66
Barium*	0.82
Benzene	0.21
Beryllium*	0.11
Cadmium*	0.23
Chromium*	0.37
Copper*	0.81
Cumene	0.02
Dichlorobenzene	0.12
Ethyl Benzene	0.07
Formaldehyde	20.34
Lead compounds*	0.84
Manganese*	1.19
Mercury*	0.15
Napthalene	0.71
n-Hexane	3.79
Nickel*	26.75
Selenium*	0.82
Toluene	5.13
Xylene	1.16
Zinc*	9.33
Total	75.36
VOC TAPs	31.55
*Non-VOC TAPs	43.81

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Prevention of Significant Deterioration Applicability

The pollutants are not being increased by significant amounts by the project. Therefore, the proposed facility is not subject to the requirements of the PSD program.

MACT requirements

Maximum Achievable Control Technology (MACT) and ambient air quality standards associated with toxic air pollutants are not applicable. Also, boiler units 1-5 and auxiliary boiler unit 3 are not subject to National Emission Standards for Hazardous Air Pollutants (NESHAP) Subpart DDDDD per 40 CFR 63.7491c.

Air Modeling Analysis

Dispersion Model(s) Used: ISCST3 (screen)

Pollutant	Time Period	Calculated Maximum Ground Level Concentration	Louisiana Toxic Air Pollutant Ambient Air Quality Standard or (National Ambient Air Quality Standard {NAAQS})
PM10	24-Hour	12.69 $\mu g/m^3$	(150) $\mu g/m^3$
	Annual	0.67 $\mu g/m^3$	(50) $\mu g/m^3$
NOx	Annual	3.25 $\mu g/m^3$	(100) $\mu g/m^3$
SO2	3-Hour	46.09 $\mu g/m^3$	(1300) $\mu g/m^3$
	24-Hour	12.71 $\mu g/m^3$	(365) $\mu g/m^3$
	Annual	0.64 $\mu g/m^3$	(80) $\mu g/m^3$

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. A boiler cleaning activity is scheduled every three years at the Willow Glen Plant, however, wastewater and chemical wash are transported off-site for disposal resulting in no emissions for this activity. For a list of General Condition XVII Activities, refer to Section VIII of the draft permit.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to Section IX of the draft Part 70 permit.

Regulatory Analysis

This permit was reviewed for compliance with 40 CFR 70, New Source Performance Standards (NSPS), and the Louisiana Air Quality Regulations. Prevention of Significant Deterioration (PSD) and National Emission Standards for Hazardous Air Pollutants (NESHAP) does not apply.

This facility is a major source of toxic air pollutants (TAPs) pursuant to LAC 33:III.Chapter 51. Per LAC 33.III.5105.B.3, emissions from Group 1 virgin fossil fuels are exempt from LAC 33.III.Chapter 51, subchapter A. Per LAC 33.III.5105.B.2, electric utility steam generating units are exempt from the requirements of LAC 33.III.51, Subchapter A.

The applicability of the appropriate regulations is straightforward and provided in the Facility Specific Requirements Section of the draft permit, or where provided, Tables 2, 3 and 4 of the draft permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are provided in the Facility Specific Requirements Section of the draft permit, or where provided, Tables 2, 3 and 4 of the draft permit.

IV. Permit Shields

There is no permit shield.

V. Periodic Monitoring

Acid Rain Monitoring

The Willow Glen Electric Generating Plant is required to install and operate a NOx continuous emissions monitoring system (CEMS), as well as a continuous opacity monitoring system (COMS) on Unit Boilers 1-5. The NOx monitoring system must consist of a NOx pollutant concentration monitor and an O2 or CO2 diluent gas monitor. The Willow Glen Electric Generating Plant will also have to monitor the heat input to each unit for each fuel fired. SO2 emissions will be monitored using the applicable rocedures specified in appendix D to 40 CFR 75.

Compliance Assurance Monitoring

Federal regulation 40 CFR 64-Compliance Assurance Monitoring (CAM) is not applicable to this facility.

VI. Applicability and Exemptions of Selected Subject Items

ID No:	Requirement	Notes
Entire Facility AI 2625	Chemical Accident Prevention and Minimization of Consequences [LAC 33:III.Chapter 59]	DOES NOT APPLY. Facility does not store or process any referenced list substances greater than the threshold amounts.
Entire Facility AI 2625	Comprehensive Toxic Air Pollutant Emission Control Program [LAC 33:III.5112]	EXEMPT. Emissions from the combustion of Group 1 virgin fossil fuels are exempt from LAC 33.III. Chapter 51 per LAC 33.III.5105.B.3.a.
EQT 9-19 Fuel Oil Storage Tanks	Control of Emissions of Organic Compounds – Storage of Volatile Organic Compounds [LAC 33:III.2103]	DOES NOT APPLY. Stored Fuel oil maximum vapor pressures < 1.5 psia.
EQT 9-20 Fuel Oil Storage Tanks	NSPS Subpart K – Standards of Performance for Storage Vessels for Which Construction, Reconstruction, or Modification Commences after June 11, 1973 and Prior to May 19, 1978. [40 CFR 60.110]	DOES NOT APPLY. Storage tank constructed before June 11, 1973.
EQT 1-4, 6-8 Units 1, 2, 4,5, and Aux. 3 Boilers	NSPS Subpart D – Standards of Performance for Steam Generating Units for which Construction, Reconstruction, or Modification Commenced after August 17, 1971. [40 CFR 60.40a]	DOES NOT APPLY. Steam Generating Units were constructed prior to August 17, 1971.
EQT 1-8 Units 1-5, and Aux. 3 Boilers	NESHAP Subpart DDDDD – National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial and Institutional Boilers and Process Heaters. [40 CFR 63.7491c]	DOES NOT APPLY. Electric utility fossil fuel-fired steam generating boilers >25 MW that serve a generator to produce electricity are not subject to this subpart.

VII. Streamlined Requirements

Unit or Plant Site	Programs Being Streamlined	Stream Applicability	Overall Most Stringent Program
Willow Glen Electric Generating Plant	None	-	-

VIII. Glossary

Best Available Control Technologies (BACT) - An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under this part which would be emitted from any proposed major stationary source or major modification which the administrative authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

Carbon Monoxide (CO) – A colorless, odorless gas which is an oxide of carbon.

Grandfathered Status- Those facilities that were under actual construction or operation as of June 19, 1969, the signature date of the original Clean Air Act. These facilities are not required to obtain a permit. Facilities that are subject to Part 70 (Title V) requirements lose grandfathered status and must apply for a permit.

Hydrogen Sulfide - A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the action of acids on metallic sulfides, and is an important chemical reagent.

Maximum Achievable Control Technology (MACT) - The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

New Source Review (NSR) - A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C ("Prevention of Significant Deterioration of Air Quality") and D ("Nonattainment New Source Review").

Nitrogen Oxides (NO_x) - Compounds whose molecules consists of nitrogen and oxygen.

Nonattainment New Source Review (NNSR) - A New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. Nonattainment NSR is designed to

ensure that emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.

Organic Compound - Any compound of carbon and another element. Examples: Methane (CH_4), Ethane (C_2H_6), Carbon Disulfide (CS_2)

Part 70 Operating Permit- Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: $\geq$ 10 tons per year of any toxic air pollutant; $\geq$ 25 tons of total toxic air pollutants; and $\geq$ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM_{10}- Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) - The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Sulfur Dioxide (SO_2) – An oxide of sulphur.

Title V permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) - Any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.